1 **OUTBOUND MAIL PIECE TRACKING**

2

3 **CROSS REFERENCE TO RELATED APPLICATIONS**

4 This application is related to co-pending U.S. Patent Application No.

5 10/731,992, attorney docket no. PSTA0003/MRK, entitled "COMPUTER

6 POSTAGE AND MAILING TRACKING LABELS," filed on December 8, 2003;

7 U.S. Patent Application No. 09/975,532, filed October 10, 2001, entitled

8 "SYSTEM AND METHOD FOR PROVIDING COMPUTER-BASED POSTAGE

9 STAMPS," which claims the benefit of U.S. Provisional Application No.

10 60/239,424, filed Oct. 10, 2000, entitled "A SYSTEM AND METHOD FOR

11 PROVIDING COMPUTER BASED POSTAGE STAMPS"; U.S. Patent Application

12 No. 09/905,329, filed July 13, 2001, entitled "WEB-ENABLED VALUE BEARING

13 ITEM PRINTING"; U.S. Patent Application No. 09/585,025, filed June 1, 2000

14 and entitled "ON-LINE VALUE BEARING ITEM PRINTING"; and U.S. Patent

15 Application No. 10/197,044, entitled "GENERIC VALUE BEARING ITEM

16 LABELS", filed July 16, 2002, all of which have been, or will be, commonly

17 assigned, the entire contents and disclosures of all of which are hereby

18 incorporated by reference for all purposes as if fully set forth herein.

19

20 **FIELD OF THE INVENTION**

21 The field of the present invention is postal systems, and particularly, postal

22 tracking systems.

23

24 **BACKGROUND OF THE INVENTION**

25 CONFIRM® service is a product offered by the United States Postal

26 Service. U.S. Postal Service *Publication 197* ("*Publication 197*") describes in

27 detail various aspects of the CONFIRM® service and CONFIRM® service

28 interfaces; *Publication 197* is incorporated by reference in full herein for all

29 purposes as if fully stated herein.

30 CONFIRM® is a mail tracking service of PLANET™ Codes that provides

31 electronic tracking information to USPS customers about their First-Class,

1 Standard letter-size, flat mail and periodicals. CONFIRM® provides advance

2 delivery information about incoming hard-copy reply mail ("Origin CONFIRM®")

3 and outbound mail ("Destination CONFIRM®").

4   In order to track mail, CONFIRM® uses a combination of two tracking

5 numbers: a 5- or 11-digit POSTNET (POStal Numeric Encoding Technique)

6 Code and a 12- or 14-digit PLANET™ Code. The POSTNET and PLANET™

7 Codes must be encoded as a barcode and applied to the mail piece.

8   In order to facilitate mail handling and optical reading equipment

9 processing of mail by the USPS and to properly interpret PC Postage, addressee

10 information, and CONFIRM® tracking information, postage indicia and related

11 labels need to be applied according to USPS guidelines. USPS guidelines

12 directed to the margins, label sizes, and placement of postage indicia, and the

13 size, placement, and other characteristics of POSTNET and PLANET™ bar

14 codes, and any facing identification mark (FIM) on mail pieces are described in

15 the Domestic Mail Manual (DMM) and Title 39, Code of Federal Register (CFR),

16 Part 111, the contents of which are incorporated by reference in full herein for all

17 purposes.

18   As each mail piece progresses through to its destination, the CONFIRM®

19 barcode on each mail piece is scanned at the different USPS processing facilities

20 through which it passes. Electronic information for each scan is captured and is

21 sent to a centralized network service, which collects the scan data and packages

22 it for use by USPS customers. The electronic scan information is then

23 electronically transferred from the centralized network and is made available in

24 two ways: through accessing a PLANET™ Codes website or via transmission of

25 electronic files sent to subscribing USPS customers.

26   CONFIRM®-barcoded mail pieces are scanned during the passage of the

27 mail piece through various USPS processing facilities, but are not scanned

28 (unless accompanied by Delivery Confirmation, Signature Confirmation, or

29 similar final mail piece disposition service) upon actual delivery.

30   A POSTNET Code identifies a particular delivery address. A PLANET™

31 Code identifies a particular CONFIRM® Subscriber's mailing. If more than one

1   mail piece in a single mailing is addressed to the same delivery address, then the

2   CONFIRM® Service does not provide individual mail piece tracking.

3   The CONFIRM® service was designed to serve the high-volume mailer

4   such as telemarketers and other businesses. High-volume mailers can benefit

5   from tracking outbound mailings. For example, information about customer

6   receipt of certain mailings would allow mailers to plan subsequent business

7   activities, such as synchronizing telemarketing efforts with delivery of

8   solicitations, or augmenting direct mail pieces with other advertising media.

9   The high-volume mailer basis for the CONFIRM® service is evident from

10   the subscription fee structure charged by the U.S. Postal Service. The

11   subscription fees, ranging from $2,000 for a three-month period, to an annual

12   $10,000 fee, are based on the number of scans, measured in the millions.

13   Although large mailings are not normally the concern of individuals,

14   individuals with low volume mailings could benefit from the ability to track

15   processing and delivery of individual mail pieces. Low volume mailers will not be

16   motivated to pay the high subscription fees for the U.S. Postal CONFIRM®

17   Service. Even if they paid such fees, the CONFIRM® Service does not

18   guarantee tracking of individual mail pieces.

19   Various private carriers provide individual parcel tracking, for a piece-

20   based premium. And yet, no mail piece tracking is available for letters mailed

21   using first class U.S. postage.

22   DELIVERY CONFIRMATION is another service provided by the U.S.

23   Postal Service. DELIVERY CONFIRMATION provides the date, time and ZIP

24   Code of delivery or attempted delivery. DELIVERY CONFIRMATION can be

25   purchased for PRIORITY MAIL® items, Package Services parcels, STANDARD

26   MAIL® parcels, and FIRST-CLASS MAIL® parcels, but is not available for use

27   with FIRST-CLASS MAIL® letters.

28   A way for low-volume mailers to track individual outbound mail pieces is

29   needed.

30

1 **SUMMARY OF THE INVENTION**

2   The exemplary embodiment of the present invention provides a way for

3 low-volume mailers to track individual outbound mail pieces, including tracking of

4 individual U.S. Postal Service FIRST-CLASS MAIL® letters. The exemplary

5 embodiment of the present invention supports tracking of multiple mail pieces

6 mailed by multiple mailers using a single computer-based postage system.

7   The exemplary embodiment of the present invention encodes a unique

8 mail piece tracking identifier as a CONFIRM® service identifier in a graphic

9 symbology. The unique mail piece tracking identifier of the exemplary

10 embodiment of the present invention conforms with requirements of a

11 CONFIRM® service identifier, while at the same time, provides, for a defined

12 period of time, mail-piece-level uniqueness for first class and other mail class

13 mail piece tracking.

14   Although the exemplary embodiment of the present invention is

15 sometimes described herein with specific reference to tracking outbound first

16 class mail pieces, it will be understood by someone with ordinary skill in the art

17 that the present invention would apply equally to other classes of mail as long as

18 the USPS, or other postal service, provides the CONFIRM® service, or a service

19 such as, or similar to, CONFIRM® for that class of mail.   It will be understood by

20 someone with ordinary skill in the art that Express Mail, and mail pieces for which

21 Delivery Confirmation or Signature Confirmation has been purchased, are

22 assigned a unique tracking identifier with which a postal customer can track the

23 delivery of the particular mail piece. However, in the case of Delivery

24 Confirmation or Signature Confirmation pieces, only actual delivery, not progress

25 through the postal system, can be tracked by virtue of the Delivery Confirmation

26 or Signature Confirmation identifier. Further, in the case of PC Postage, Express

27 Mail PC Postage is not specifically related in a computer system to a particular

28 Express Mail Serial Number, but rather, is related to a date and delivery address.

29 Further, in the case of PC Postage for Express Mail, Delivery Confirmation and

30 Signature Confirmation pieces, although the PC Postage label itself is related to

31 a particular mailer, the Express Mail, Delivery Confirmation or Signature

1 Confirmation tracking number for the particular piece of mail is not related in a

2 computer system to a particular mailer.

3   The exemplary embodiment of the present invention provides a method

4 for tracking individual outbound mail pieces, said method comprising: assigning

5 an identifier to a particular mail piece wherein said identifier uniquely identifies

6 the particular mail piece during a particular period of time; and relating the unique

7 mail piece identifier to a particular mailer.

8   The exemplary embodiment of the present invention provides a unique

9 mail piece identifier graphic symbology, said unique mail piece identifier graphic

10 symbology comprising: an encoded subscriber identifier; an encoded mailing

11 identifier; and an encoded delivery address identifier, wherein the encoded

12 delivery address identifier is unique within a combination of the encoded

13 subscriber identifier and the encoded mailing identifier.

14   The exemplary embodiment of the present invention provides a method of

15 encoding a unique mail piece identifier as a graphic symbology, said method

16 comprising: assigning an identifier to a particular mail piece wherein said

17 identifier uniquely identifies the particular mail piece during a particular period of

18 time and wherein said identifier comprises a subscriber identifier, a mailing

19 identifier, and a delivery address identifier, wherein the delivery address identifier

20 is unique within a combination of the subscriber identifier and the mailing

21 identifier.

22

23 **BRIEF DESCRIPTION OF THE DRAWINGS**

24   These and other features, aspects, and advantages of the present

25 invention will become better understood with regard to the following description,

26 appended claims, and accompanying drawings in which:

27   FIG. 1 is a graphic representation depicting an exemplary graphical user

28 interface for obtaining a customer's request to track a particular mail piece in an

29 exemplary embodiment of the present invention;

1   FIG. 2 is a high level logic flow diagram depicting an exemplary process

2   for building and storing a unique mail piece tracking identifier in an exemplary

3   embodiment of the present invention;

4   FIGS. 3A and 3B are high level logic flow diagrams depicting an

5   exemplary process for building a unique mail piece tracking number in an

6   exemplary embodiment of the present invention;

7   FIG. 4 is a high level logic flow diagram depicting an exemplary process

8   for processing electronic scan data in an exemplary embodiment of the present

9   invention;

10   FIG. 5 is a high level logic flow diagram depicting an exemplary process

11   for reporting mail piece tracking information to a customer; and

12   FIG. 6 is a block diagram depicting an exemplary configuration of server

13   computers and a tracking applications program interface for facilitating tracking of

14   mail pieces in an exemplary embodiment of the present invention.

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16   **DETAILED DESCRIPTION OF THE INVENTION**

17   In the exemplary embodiment of the present invention, a CONFIRM®

18   Service subscriber obtains at least one subscriber identifier, such as by, among

19   other things, paying the appropriate CONFIRM® Service subscription fee.

20   The exemplary CONFIRM® Service subscriber then resells CONFIRM®

21   Service access to low volume individual mailers. Depending on the number of

22   customers that use the exemplary CONFIRM® Service subscriber's services, the

23   exemplary CONFIRM® Service subscriber may obtain a plurality of subscriber

24   identifiers.

25   The exemplary mail piece tracking provider described herein is a

26   CONFIRM® Service subscriber reseller. It will be understood by someone with

27   ordinary skill in the art that the exemplary CONFIRM® Service subscriber reseller

28   mail piece tracking embodiment of the present invention is illustrative and non-

29   limiting, and that the present invention will be equivalently applicable to non-

30   reseller embodiments.

1   FIG. 2 is a high level logic flow diagram depicting an exemplary process

2   for building and storing a unique mail piece tracking identifier in an exemplary

3   embodiment of the present invention. As depicted in function block 20 of FIG. 2,

4   a customer of the exemplary CONFIRM® Service subscriber reseller mail piece

5   tracking provider requests that a particular mail piece be tracked. For each such

6   mail piece requested by a customer to be tracked, the exemplary CONFIRM®

7   Service subscriber reseller mail piece tracking provider computer system

8   receives the customer's request, as depicted in function block 21 of FIG. 2, and

9   will request from the customer payment and authorization to proceed, as

10   depicted in function block 22 of FIG. 2, before proceeding to build a unique mail

11   piece tracking identifier.

12   The exemplary embodiment of the present invention described herein is

13   an Internet application of the present invention. It will be understood by someone

14   with ordinary skill in the art that the exemplary Internet embodiment of the

15   present invention is illustrative and non-limiting, and that the present invention

16   will be equivalently applicable to non-Internet embodiments, including but not

17   limited to, PC-based systems.

18   The exemplary embodiment of the present invention is implemented in an

19   online Internet-based (or PC-based) postage system. The United States Postal

20   Service (USPS) provides the Information Based Indicia Program (IBIP.) The IBIP

21   facilitates PC-based (Personal Computer based) Postage, also sometimes

22   referred to as computer-based, or Internet-based, Postage. With PC Postage, a

23   user can purchase postage credit, and print the postage in the form of PC

24   Postage onto a label or directly onto a mail piece. A PC Postage label provides a

25   human-readable portion and a 2-dimensional barcode portion. The human-

26   readable portion includes the postage value, mail class, the date, and optionally

27   a logo. The barcode portion is intended to help thwart fraud, and includes

28   information about the mail piece including the destination ZIP code, the amount

29   of postage applied, the date and time the postage was applied, and a digital

30   signature so that the USPS can validate the authenticity of the postage.

1   In one exemplary embodiment of PC Postage, a user subscribes to a third

2   party Internet postage provider, such as, for example, Stamps.com (of Santa

3   Monica, Calif.), and by using postage software made available by the Internet

4   postage provider, postage value can be downloaded to the user's computer. The

5   user can then print the postage indicia, by an ordinary laser or ink jet printer,

6   directly onto the mail piece itself (e.g. onto business envelopes), onto a label to

7   be applied to the mail piece, or alternately on an insert that can be placed into a

8   window envelope so that it will show through a window envelope. Such postage

9   software preferably works in conjunction with other software programs, such as

10   word processing, accounting, database, and contact management software to

11   allow a user to conveniently print PC Postage at the same time that addressee

12   and bar code information is printed, and, in some cases of envelope printing, at

13   the same time as the sender's return address is printed.

14   An example of a computer-based postage system is a software-based,

15   online postage system described in U.S. Patent Application Ser. No. 09/163,993

16   filed on Sep. 29, 1998, by Mohan Ananda, entitled "On Line Postage System,"

17   the contents of which are hereby incorporated by reference as if set forth in full.

18   The online postage system software comprises user code, also sometimes

19   referred to as client software, that resides on a client system, and controller code,

20   also sometimes referred to as server software, that resides on a server system.

21   An exemplary on-line postage system may comprise a user system electronically

22   connected to a server system, which in turn is connected to a USPS system. The

23   server system is preferably capable of communicating with one or more client

24   systems simultaneously.

25   It will be understood by someone with ordinary skill in the art that the

26   present invention would be equivalently applicable in contexts other than an

27   Internet-based tracking service provider, including, but not limited to, other PC-

28   and computer-based systems.

29   FIG. 1 is a graphic representation depicting an exemplary graphical user

30   interface for obtaining a customer's request to track a particular mail piece. In

31   the exemplary interface depicted in FIG. 1, the customer requests that a

1 particular mail piece for which the customer is printing Internet FIRST-CLASS

2 postage be tracked by clicking an onscreen tracking option button 10.

3   It will be understood by someone with ordinary skill in the art that there are

4 many ways and formats with which to capture a customer's online request for a

5 service, varying from pull down menus of selectable services, to clicking or

6 otherwise indicating a particular option presented on a graphical user interface;

7 the exemplary graphical user interface is illustrative and non-limiting.

8   In the exemplary embodiment, when a customer requests that a particular

9 mail piece be tracked, a unique identifier is then assigned to the particular mail

10 piece. The exemplary unique mail piece identifier comprises a specially

11 assigned combination of a POSTNET Code and a PLANET™ CODE such that,

12 for a defined period of time, the POSTNET Code is unique within the PLANET™

13 Code. This exemplary unique mail piece identifier is referred to herein as a

14 "composite confirm ID" or "CCID."

15   PLANET™ Codes are 12- or 14-digit codes and can be represented as

16 barcodes such as a one-dimensional barcode. The first two digits of a

17 PLANET™ Code represent the type of CONFIRM® service: Destination

18 CONFIRM® or Origin CONFIRM®.

19   For Destination CONFIRM®, the next 9, or 11, digits of the PLANET™

20 Code comprise a 5-digit Subscriber ID that is a unique identifier of the particular

21 CONFIRM® subscriber and a 4-, or 6-, digit field defined by the particular mailer

22 to identify the actual mailing. The 12th, or 14th, digit of the PLANET™ Code is a

23 check-sum digit for error detection.

24   A POSTNET Code comprises a 5-digit ZIP code and, if the particular

25 delivery address can be found in a postal address database, a 4-digit area code,

26 and a 2-digit delivery address code. If the particular delivery address cannot be

27 found in the postal address database, then, as long as the city, state and ZIP

28 code of the delivery address are otherwise valid, the POSTNET Code comprises

29 only the 5-digit ZIP code.

30   In the exemplary embodiment, the POSTNET Code for the exemplary

31 POSTNET Code unique mail piece identifier is populated by the Internet Postage

1   system with the appropriate 5-digit ZIP code, 4-digit area code, and 2-digit

2   delivery address code fields obtained by the Internet Postage system in response

3   to the customer's input of a delivery address 11.

4   In order for the composite confirm ID to uniquely identify a particular mail

5   piece, the composite confirm ID needs to be unique for a time period that is at

6   least as long as, or exceeds, the time expected to be required for the mail piece

7   to be delivered, and scanned. In the exemplary embodiment of the present

8   invention, the uniqueness time period will be set to 30, 60, 90 days, or for certain

9   types of mail, permanent.

10   It will be understood by someone with ordinary skill in the art that the

11   composite confirm ID (CCID) need not necessarily include the entire POSTNET

12   Code to uniquely identify a mail piece. It is possible to use less than the full

13   POSTNET Code to construct a unique mail piece identifier. For example, 1, 2 or

14   more digits of the POSTNET Code could be used to construct a unique CCID.

15   The number of digits of the POSTNET Code that would be needed to construct a

16   unique CCID mail piece identifier would depend on circumstances regarding a

17   particular CONFIRM® Service subscriber and the number of its customers.

18   As briefly previously mentioned above, the exemplary mail piece tracking

19   provider is itself a CONFIRM® Service subscriber. As a CONFIRM® Service

20   subscriber, the exemplary mail piece tracking provider registers with the U.S.

21   Postal Service to obtain one or more subscriber identifiers (subscriber IDs). For

22   non-limiting illustrative purposes only, three (3) exemplary subscriber IDs will be

23   described herein, namely "01", "02" and "03." It will be understood by someone

24   with ordinary skill in the art that more or less subscriber IDs could be used

25   without departing from the spirit of the invention.

26   Continuing with FIG. 2, when a customer of the exemplary mail piece

27   tracking provider requests 20 that a particular mail piece be tracked, the

28   exemplary Internet Postage computer system receives 21 the tracking request

29   and charges 22 the customer, such as through a pre-established account

30   balance, an amount of money appropriate for the tracking of the particular mail

31   piece. The system checks in step 23 to determine whether or not tracking is

1   authorized. If the customer declines to pay for the tracking service, the system

2   returns 24 to its other processing. If the customer has paid the requested

3   amount, such as, e.g., by indicating (e.g., clicking on an online print button on a

4   user interface (not shown)) authorization of the printing of an Internet Postage

5   stamp and a tracking label, then the exemplary Internet Postage computer

6   system builds 25, and assigns to the particular mail piece, a unique composite

7   confirm ID (CCID) and stores 26 the assigned unique composite confirm ID, with

8   other information described in more detail below, in a memory 27, such as in a

9   database or lookup table. The memory storage of the assigned CCIDs is

10   sometimes referred to herein, for non-limiting illustrative purposes, as the "CCID

11   database" 27.

12   Once the system has built and assigned a unique CCID to the particular

13   mail piece, the system then encodes the CCID and prints 28 a mail piece

14   tracking graphic symbology, that can be applied to the particular mail piece and

15   that can then be scanned by the U.S. postal service. The general way in which

16   data is encoded for printing as a graphic symbology is well known in the art. The

17   particular requirements for encoding and printing a U.S. Postal CONFIRM®

18   identifier is prescribed in U.S. Postal Service *Publication 197*, previously

19   incorporated by reference herein for all purposes.

20   After encoding and printing 28 the mail piece tracking graphic symbology,

21   the system returns 24 to its other processing.

22   FIGS. 3A and 3B are high level logic flow diagrams depicting in more

23   detail an exemplary process for building (element 25 in FIG. 2) a unique mail

24   piece tracking number in an exemplary embodiment of the present invention. In

25   order for the composite confirm ID to uniquely identify a particular mail piece, the

26   exemplary Internet Postage computer system first searches 30 the CCID

27   database 27 for a previously assigned composite confirm ID with the same

28   POSTNET Code as the POSTNET Code of the particular mail piece for which

29   tracking has been requested by the customer. That is, the exemplary Internet

30   Postage computer system uses the POSTNET Code of the particular mail piece

31   for which tracking has been requested by the customer as a lookup key.

1   In one alternative embodiment, instead of using only the POSTNET Code

2   as the lookup key, a combination of POSTNET Code and mail class/service type

3   code is used as a lookup key.

4   Continuing with FIGS. 3A and 3B, the exemplary Internet Postage

5   computer system tests (test step 31, FIG. 3A) whether or not the mail piece

6   POSTNET was found. If the POSTNET Code (or in the alternative embodiment,

7   the combination of the POSTNET Code and mail class/service type code) does

8   not exist 32 in the CCID database 27, then the exemplary Internet Postage

9   computer system uses (in step 33) the first Mailing ID ("000001") and the first

10   subscriber ID ("00001") to build 34 the unique composite confirm ID (CCID). The

11   system then returns 35 to its other processing

12   In the case in which the POSTNET Code (or in the alternative

13   embodiment, the combination of the POSTNET Code and mail class/service type

14   code) does not exist in the CCID database, in order to build the unique CCID, the ·

15   exemplary Internet Postage computer system sets a first field (referred to herein

16   as the "CCID type of CONFIRM® service") to a value designating that the

17   CONFIRM® service type is "Destination" CONFIRM®. In the exemplary

18   embodiment, the CCID type of CONFIRM® service field is a 2-digit field.

19   In the case in which the POSTNET Code (or in the alternative

20   embodiment, the combination of the POSTNET Code and mail class/service type

21   code) does not exist in the CCID database, in order to further build the unique

22   CCID, the exemplary Internet Postage computer system sets a second field

23   (referred to herein as the "CCID subscriber ID") in the CCID to a first subscriber

24   ID, e.g., "00001". In the exemplary embodiment, the CCID subscriber ID is a 5-

25   digit field.

26   The exemplary Internet Postage computer system sets a third field

27   (referred to herein as the "CCID mailing ID") in the CCID to a first mailing ID, e.g.,

28   "000001". In the exemplary embodiment, the CCID mailing ID is a 6-digit field.

29   In an alternative embodiment, the CCID mailing ID could be a 4-digit field.

30   The exemplary Internet Postage computer system sets a fourth field

31   (referred to herein as the "CCID POSTNET") in the CCID to the POSTNET Code

1   of the particular mail piece for which the customer has requested tracking. In the

2   exemplary embodiment system, the customer mailer will have requested and

3   paid for an Internet-based postage-indicia-bearing label to be printed with which

4   to mail the particular mail piece. In those instances in which the customer mailer

5   has provided the delivery address for the particular mail piece in order for the

6   system to prepare the Internet-based postage-indicia-bearing label for the mail

7   piece, the system will use the Internet-based postage-indicia-bearing label

8   delivery address information supplied by the customer mailer with which to

9   populate the CCID POSTNET.

10   In the alternative exemplary embodiment in which the lookup key includes

11   both the POSTNET Code and the mail class/service type code, the exemplary

12   alternative Internet Postage computer system would also set a fifth field (referred

13   to herein as the "CCID service type") in the CCID to the mail class/service type of

14   the mail piece for which the customer has requested tracking.

15   Once the exemplary Internet Postage computer system (sometimes

16   referred to herein as the "system") has built a CCID, such as is depicted in

17   function blocks 33-34 of FIGS. 3A-3B, to uniquely identify the mail piece to be

18   tracked, the system builds a CCID record, as depicted in function block 26 in

19   FIG. 2, for storage in the CCID database 27.

20   In building (function 26, FIG. 2) the CCID record, the system assigns a

21   permanently unique "Print ID" to the just-built CCID and associates the Print ID

22   with an identifier of the particular customer that requested tracking of the

23   particular mail piece. The system then populates the CCID database record for

24   storage with the following information: Print ID, CCID, Customer ID/Meter No.,

25   mailing date, time period required for uniqueness, print date (optional in some

26   embodiments), amount of postage (optional in some embodiments), tracking fee

27   (optional in some embodiments), and Mail Class/Service Type (optional in some

28   embodiments). In one alternative embodiment, instead of storing in each CCID

29   database record a time period during which the CCID must remain unique, the

30   system would store an expiration date. Once the CCID database record has

31   been built, the system stores the CCID database record in the CCID database.

1   As will be understood by someone with ordinary skill in the art, the above-

2   identified data fields, in what is referred to herein as the CCID database record,

3   are exemplary and non-limiting. In alternative embodiments, the CCID database

4   record may contain links to other databases or tables in order to link the

5   particular CCID database record to a particular customer.

6   Returning to FIGS. 3A-3B, if the POSTNET Code (or in the alternative

7   embodiment, the combination of the POSTNET Code and mail class/service type

8   code) already exists in the CCID database 27, then the exemplary Internet

9   Postage computer system must first determine the next available unique

10   combination of the subscriber ID and Mailing ID in order to build the unique

11   composite confirm ID (CCID).

12   In order to determine the next available unique combination of the

13   subscriber ID and Mailing ID, the system will search 40 for the CCID database

14   record for the given POSTNET Code (or in the alternative embodiment, the

15   combination of the POSTNET Code and mail class/service type code) with the

16   highest (maximum) subscriber ID and the highest (maximum) Mailing ID.

17   Depending on the computer language and database technology used, the search

18   may be initiated by an instruction to give the CCID database record with the

19   lookup POSTNET Code (or in the alternative embodiment, the combination of the

20   lookup POSTNET Code and mail class/service type code) having the maximum

21   subscriber ID and the maximum Mailing ID.

22   Once the system returns the CCID database record with the lookup

23   POSTNET Code (or in the alternative embodiment, the combination of the lookup

24   POSTNET Code and mail class/service type code) having the maximum

25   subscriber ID and the maximum Mailing ID, the system determines 41 whether

26   the next Mailing ID is available for the maximum subscriber ID. If the next

27   Mailing ID is available for the maximum subscriber ID, the system then uses 42

28   the next available (next increment of) Mailing ID for that maximum subscriber ID

29   to build 34 the unique CCID, and then returns 35 to the system's other

30   processing.

1   If the next available Mailing ID exceeds the maximum allowable number

2   (in the exemplary embodiment, "999999"), and the next available Mailing ID is

3   "000001", the system then determines 50 whether the next subscriber ID is

4   available. If the next subscriber ID is available, the system then uses 51 the next

5   available subscriber ID and the first ("000001") Mailing ID for that subscriber ID

6   and builds 34 the unique CCID and then returns 35 to the system's other

7   processing.

8   If when the system attempts to use the next available Mailing ID and

9   subscriber ID, there are no more available Mailing IDs for existing subscriber IDs,

10   then the system searches 60 for existing CCID database records for the lookup

11   POSTNET Code (or in the alternative embodiment, the combination of the lookup

12   POSTNET Code and mail class/service type code), for which the Mailing date for

13   the particular mail piece to be tracked exceeds the expiration date for the CCID

14   database record. The expiration date will be either stored in the CCID database

15   record, or can be calculated by adding the time period required for uniqueness

16   that is stored in the CCID database record to the mailing date that is stored in the

17   CCID database record.

18   When an expired CCID database record is returned to the system in

19   response to the search with the mail piece lookup POSTNET Code (or in the

20   alternative embodiment, the combination of the lookup POSTNET Code and mail

21   class/service type code), the system "recycles" the CCID (in function 61, FIG. 3B)

22   -- the system updates the returned expired CCID database record by populating

23   the record with information about the new CCID and print event in order to build

24   34 the unique CCID before returning 35 to the system's other processing.

25   The CCID conforms with the U.S. Postal Service's requirements for a U.S.

26   Postal CONFIRM® service identifier, while at the same time, the CCID provides,

27   for a defined period of time, mail-piece-level uniqueness for mail piece tracking.

28   As was previously described above with regard to FIG. 2, once the system

29   has built 25 a CCID and a CCID Record, and has stored 26 the CCID record on

30   the CCID database 27, the system encodes the CCID for printing as a graphic

31   symbology, and prints the graphic symbology. In the exemplary embodiment of

1   the present invention, the CCID-encoded graphic symbology is a bar code. In

2   the exemplary embodiment, the system prompts the customer mailer to request a

3   final indication by the customer mailer that the customer mailer is ready for the

4   system to print the graphic symbology. Once the exemplary embodiment system

5   receives the customer mailer's go-ahead to print, the exemplary embodiment

6   system prints 28 the CCID-encoded bar code on a label.

7   In an alternative exemplary embodiment of the present invention, an

8   alternative approach is used to manage CCID life- and expiration- times. The

9   alternative approach uses a first designated account group comprising a first set

10   of subscriber IDs, e.g., subscriber ID 1, 2, and 3, for a designated first period of

11   time, for example, 0-90 virtual relative calendar days. In this embodiment, a

12   virtual relative calendar is used. According to the virtual relative calendar, the

13   virtual relative calendar day is initialized to 0, and is then incremented by one for

14   each real calendar day. During the first period of time, e.g., the first 90 virtual

15   relative calendar days, of this alternative embodiment, the system would assign

16   CCIDs with subscriber IDs from the first account group set of subscriber IDs,

17   e.g., subscriber ID 1, 2, or 3. After the first period of time has expired, this

18   alternative approach then uses a second designated account group comprising a

19   second set of subscriber IDs, e.g., subscriber IDs 4, 5, and 6, for a designated

20   second period of time, e.g., 91-180 virtual relative calendar days. During the

21   second period of time, e.g., the 91-180 virtual relative calendar days, of this

22   alternative embodiment, the system would assign CCIDs with subscriber IDs

23   from the second account group set of subscriber IDs, e.g., subscriber ID 4, 5, or

24   6. After the second period of time expires, this alternative approach would then

25   restart the virtual calendar to virtual relative calendar day zero and would begin

26   again to assign CCIDs with subscriber IDs in the first account group.

27   It will be understood by someone with ordinary skill in the art that the

28   description above of two account groups is illustrative and non-limiting; that the

29   description above of each account group being comprised of three subscriber IDs

30   is illustrative and non-limiting; and that the description above of a particular

31   number of periods of time and of a particular number of days for each period of

1 time is illustrative and non-limiting. More than two account groups could be

2 used. Each account group could be comprised of more than three, or less than

3 three, subscriber IDs. More than two periods of time could be used. And each

4 time period could be set for more than 90 days, or less than 90 days. Further,

5 each time period could be set for a different number of days relative to the

6 number of days of each other time period.

7 In order to track the mail piece, before depositing the mail piece into the

8 U.S. Postal Service mail stream, the customer mailer will affix the printed CCID-

9 encoded bar code label to the mail piece on the delivery-address side of the mail

10 piece in a position relative to the delivery address as specified and required by

11 the U.S. Postal Service. The exemplary embodiment system instructs the

12 customer mailer as to the proper placement of the CCID-encoded bar code label.

13 In the exemplary embodiment system, as described above, the customer

14 mailer has requested and paid for the printing of one or more Internet-based

15 postage-indicia-bearing labels, in some cases including a delivery address label,

16 for affixing to the mail piece. In such case, the customer mailer will affix the

17 Internet-based postage-indicia-bearing label(s), and, if applicable, the address

18 label, and in some cases, a separate CCID-encoded bar code label. In some

19 cases, instead of a single CCID-encoded bar code label, a label bearing a CCID

20 PLANET™ Code barcode and another label bearing a CCID POSTNET Code

21 barcode will be printed, depending on a label set configuration used by a

22 customer mailer and designated to the exemplary embodiment system. It will be

23 understood by someone with ordinary skill that, in yet other cases, the customer

24 mailer could use alternative label set configurations and request printing of a

25 postage-indicia-bearing label and a label bearing a CCID PLANET™ Code

26 barcode; the address and POSTNET barcode could be pre-printed on a letter

27 and visible through an envelope window, or could be printed directly on an

28 envelope.

29 Once a mail piece bearing a graphic symbology encoding a CONFIRM®

30 service ID has been deposited in the U.S. Postal Service mail stream, the U.S.

31 Postal Service will scan the mail piece at various stages of processing. Each

1   time a CONFIRM® service ID graphic symbology-bearing mail piece is scanned

2   by the U.S. Postal Service, the scanned information, along with details about the

3   scanning event, are electronically captured. Each scan of a mail piece results in

4   the creation of a record containing the following information: Shipment ID, Postal

5   Service facility, Facility ID (ZIP), Date of entry scan (in mm/dd/yyyy format), and

6   time of entry scan (in hh:mm:ss format). The Shipment ID is the CONFIRM®

7   service ID, which, in the case of a mail piece to which a customer mailer has

8   prepared the CONFIRM® label using the exemplary embodiment system,

9   comprises the CCID-encoded bar code label.

10   Scanned data is made available to each CONFIRM® subscriber in more

11   than one way. According to U.S Postal Service *Publication 197*, the U.S. Postal

12   Service can provide a subscriber with scanned information though File Transfer

13   Protocol (FTP). The U.S. Postal Service also makes scanned information

14   available via password-protected access of a Web site, www.planetcodes.com.

15   FIG. 4 is a high level logic flow diagram depicting an exemplary process

16   for processing electronic scan data in an exemplary embodiment of the present

17   invention. As depicted in FIG. 4, the exemplary embodiment system receives 70

18   the electronic scan data from the U.S. Postal Service in one of the available

19   ways. When the exemplary embodiment system receives electronic scan

20   records, for each received electronic scan record, the system searches 71 the

21   CCID database 27 to identify a non-expired CCID record matching the Shipment

22   ID of the scanned record. When the exemplary embodiment system identifies a

23   non-expired CCID record matching the Shipment ID of a particular scanned

24   record, the system identifies 72 the Print ID, and the correlating customer mailer

25   ID, associated with the CCID record. The system then stores 73 the electronic

26   scan record, and associated Print ID and customer mailer ID information, in a

27   scan data database 74 before returning 75 to other system processing.

28   It will be understood by someone with ordinary skill in the art that the

29   databases identified herein and the database data relationships described herein

30   could be configured in various ways; that the non-limiting exemplary databases

1 identified and their configurations are provided for non-limiting illustrative

2 purposes.

3   The exemplary system can report the scan data for a particular customer's

4 mail piece in various ways. The exemplary system will ask the user before the

5 time that the CCID mail piece tracking label is printed how the user wants to

6 receive information about the mail piece status during processing and at delivery.

7 Among other ways, the exemplary system will provide mail piece tracking status

8 reporting via the following non-limiting exemplary types of reports: on a website,

9 via email to the receiver and/or the sender, via a look-up from a print history of

10 the Internet-based postage system, email notification of expected delivery,

11 wireless notification of expected delivery, and phone look-up.

12   FIG. 5 is a high level logic flow diagram depicting an exemplary process

13 for reporting mail piece tracking information to a customer. As depicted in FIG. 5,

14 when a customer requests 80 status of a particular mail piece, the system will

15 search 81 the scan data database 74 for information about the particular mail

16 piece. When the system locates information about the particular mail piece, the

17 system will report 82 the mail piece status to the customer before returning 83 to

18 other system processing. In the exemplary embodiment, the system will report

19 all scan data received for that particular mail piece.

20   In addition to customer-based reporting, the system will also provide

21 system-wide reporting, including, by non-limiting example: mass mailing reports

22 of everything in the system, facility problem reports, reports of items that have

23 never been scanned, reports of items that were scanned at least once, but have

24 disappeared, average delivery time of mail pieces, average delivery time by

25 region, and average delivery time by mail service class.

26   FIG. 6 is a block diagram depicting an exemplary configuration of server

27 computers and a tracking applications program interface for facilitating tracking of

28 mail pieces in an exemplary embodiment of the present invention. FIG. 6

29 depicts, in a server environment context, an exemplary system configuration for

30 processing mail piece tracking information and for reporting that information to a

31 customer based on a specific tracking request.

1   As depicted in FIG. 6, one to a plurality of postal server computers 103 are

2   provided. The postal server computers 103 serve as main transaction servers for

3   the postal system 1001 (the system to the left of the dotted line 106-106). The

4   postal server computers 103 access the postal database 200. The postal

5   database 200 contains, among other things, information about each registered

6   postal meter, registration information for each customer to which each respective

7   postal meter is registered, CONFIRM® scan events, CONFIRM® exceptions,

8   CONFIRM® fraud detection statistics, refund information, and other types of

9   information. A dedicated USPS Provider Server 104 is provided for accessing a

10 USPS system 105 provided by the USPS.

11   As depicted in FIG. 6, one to a plurality of postal X server computers 102

12 are provided. The postal X server computers 102 serve as backend transaction

13 servers. The postal X server computers 102 respond to requests from

14 transaction-specific type servers, such as a Delivery Confirmation Server 101.

15   The Delivery Confirmation Server 101 provides a tracking request

16 Application Program Interface (API) 100. The tracking request API 100 is a

17 program interface that receives and processes API requests comprising

18 electronic objects of a particular type. Herein, reference to an API Server, or to

19 API Servers, refers to one or more server computers that are programmed to

20 perform various activities comprising particular API functions, including but not

21 limited to receiving and translating various types of API requests and composing

22 and transmitting various types of API responses to the appropriate party's

23 system.

24   In an exemplary embodiment of the invention, the tracking request API

25 100 retrieves and processes tracking API requests in the form of XML

26 (Extensible Markup Language) documents. XML is a markup language for

27 electronic documents. A mark up language such as XML uses certain defined

28 delimiters and tag names to designate meaning and/or organization of marked

29 text within an electronic document.

30   As depicted in FIG. 6, the exemplary system Tracking Request

31 Applications Program Interface (API) 100 would process mail piece scan data,

1 and would store mail piece scan data on the scan data database 74. The

2 Tracking Request API 100 would respond to tracking requests 80 input by a user

3 with a report of mail piece tracking events.

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5 **TRADEMARKS**

6 CONFIRM®, PRIORITY MAIL®, STANDARD MAIL®, and FIRST-CLASS

7 MAIL® are registered trademarks of the United States Postal Service.

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20 **ILLUSTRATIVE EMBODIMENTS**

21 Although this invention has been described in certain specific

22 embodiments, many additional modifications and variations would be apparent to

23 those skilled in the art. It is, therefore, to be understood that this invention may

24 be practiced otherwise than as specifically described. Moreover, to those skilled

25 in the various arts, the invention itself herein will suggest solutions to other tasks

26 and adaptations for other applications. Thus, the embodiments of the invention

27 described herein should be considered in all respects as illustrative and not

28 restrictive, the scope of the invention to be determined by the appended claims

29 and their equivalents rather than the foregoing description.

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